



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,153	09/10/2003	David G. Grier	040563-0167	1851
27433	7590	09/19/2005	EXAMINER	
FOLEY & LARDNER 321 NORTH CLARK STREET SUITE 2800 CHICAGO, IL 60610-4764			HASHMI, ZIA R	
			ART UNIT	PAPER NUMBER
			2881	

DATE MAILED: 09/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/659,153

Applicant(s)

GRIER ET AL.

Examiner

Zia R. Hashmi

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/4/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-20 are rejected under U.S.C. 103(a) as being unpatentable over Ashkin et al. (4,893,886), in view of Matsui et al. (US 2002/0109923 A1).

2. With respect to independent claim 1 and dependent claims 3, 5-6 and 8, Ashkin et al. disclose a method of manipulating mesoscopic particles (col. 2, lines 26-29 and col. 4, lines 50-57), comprising the steps of: providing a beam of light (Abstract, lines 1-2); focusing the beam of light with a lens (col. 2, lines 64-67, col. 4, lines 24-26, and 23 in Fig. 1) with a sufficiently large numerical aperture (Abstract, lines 2-3, col. 1, lines 31-34, col. 3, and lines 24-26) to create a single-beam gradient-force optical trap having a transverse optical gradient component (col. 1, lines 23-25); and using the optical trap to exert forces transverse to the optical axis of the beam of laser light (col. 1, lines 11-30 and col. 4, lines 34-35). They also disclose that forces exerted by the optical trap transport mesoscopic matter. It is understood that mesoscopic matter refers to particles which include biological cells, nanoclusters, etc.

3. With respect to claims 1-2, 4, 7, and 9-20, Ashkin et al. fail to disclose a method of correcting aberrations of an optical trapping system. Matsui et al., however, disclose method and apparatus of correcting measured aberrations in an optical train defining an

optical trapping system (section 0053, lines 4-9, section 0054, lines 1-15, section 0125, lines 3-11, section 0139, lines 1-6, section 0175, lines 1-4, section 0190, claim 6, and Fig. 5A-C & 6A). They also show a monitoring device comprising a camera (section 0138, lines 1-8 and Fig. 6A).

It would have been obvious to one having ordinary skill at the time of the invention was made to combine methods and apparatus of Ashkin and Matsui et al., because Ashkin et al. teach (col. 2, lines 26-29) that single-beam gradient force optical traps are useful for confining, isolating, translating and manipulating particles.

Conclusion

4. Kelleher et al. disclose (6,867,411) an optically rebalanced accelerometer for detecting an acceleration of a proof mass, which includes a source of optical radiation for generating a pair of beams of output radiation.

5. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact Electronic Business Center (EBC) at 866-217-9197 (toll-free).

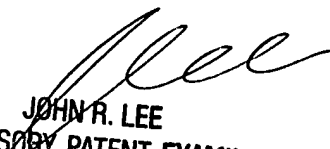
6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zia Hashmi whose telephone number is (571) 272-2473. The examiner can normally be reached between 8.30 AM- 5 PM. If attempts to reach

Art Unit: 2881

the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477.

Zia Hashmi

September 13, 2005.


JOHN R. LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800